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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/687,762

10/13/2000

Yao-Min Chen

3981-3

1075

20575

7590

06/01/2004

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EXAMINER

PHAN, MAN U

ART UNIT

PAPER NUMBER

2665

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/687,762

Applicant(s)

CHEN ET AL.

Examiner

Man Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 22-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 15-17 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 7-14, 18 and 26-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The application of Chen et al. for a "Interleaved weighted fair queuing mechanism and system" filed 10/13/2000 has been examined. Responsive to the restriction requirement filed on 04/05/2004, affirmation of the election has been made by applicant, and a provisional election was made without traverse to prosecute the invention of group I, claims 1-18 and 22-31. Claims 19-21 are withdrawn from further consideration by the Examiner, 37 C.F.R. ' 1.142(b), as being drawn to a non-elected invention. Claims 1-18 and 22-31 are pending in the application.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Reference characters (56), (90) as shown in Fig. 3.

Reference characters (144), (146) as shown in Fig. 8

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1, 13-14, 30-31 are objected to because of the following informalities: "the

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interleaving table” should read --the programmable interleaving table – (line 5 for claim 1, lines 2, 4 for claim 13, 30, and line 1 for claim 14, 31) for the purpose of art rejection.

Appropriate correction is required.

4. Claims 15-18 are objected to because of the following informalities:

The claims contain the phrase “adapted to”. It has been held that the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138. Appropriate correction is required.

Claim Rejections - 35 USC ' 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point

out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 1038 and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffield et al. (US#6,452,933) in view of Braff et al. (US#5,166,930).

With respect to claims 15-17, both Duffield and Braff disclose a novel method and system for weighted fair queuing scheduler in routing packets from multiple queues, according to the essential features of the claims. Duffield et al. (US#6,452,933) provides a method and system for fair queue servicing at a queuing point in a multi-service class packet switched network. Fig. 2 illustrated a weighted fair queuing (WFQ) system implemented in routers and switches in a packet based communication system. The system consists of a set of queues 100, a shaper device 30a, . . . 30i associated with each queue, and Weighted Fair Queueing Server or Rate Proportional Server 40 and a State Dependent Server (SDS) 200. Packets are temporarily stored in the queues 20a, . . . 20i. A weight is assigned with each of these queues representing the portion of the output bandwidth that must be allocated to the packets arriving in each of the queues. The shaper device is forwarding packets from the queues to the Weighted Fair Queueing Server with a rate exactly equal to the allocated. This scenario enables excess bandwidth to become available for redistribution. In accordance with the principles of the invention, traffic from another source, i.e., another queue, may be directed to the adaptive bandwidth redistribution mechanism, which is hereafter referred to as state dependent scheduler 200 (Col. 4,

lines 6 plus, and Col. 5, lines 55 plus).

In the same field of endeavor, Braff et al. (US#5,166,930) discloses a scheduling discipline for providing data devices access to the slotted packet data system, in which the information identifying one or more data packets of each data batch is sorted into one or more of a plurality (N) of epoch queues, such that for each data batch, no information identifying more than a predetermined number (P) of data packets from a particular channel is inputted into each epoch queue. Each epoch queue is then cyclically served exhaustively by outputting the identified data packets to the facility. Data that cannot be placed in the epoch queues is temporarily placed in an overflow queue. The overflow queue data is subsequently sorted into the epoch queues and transmitted (See also Figs. 5 & 9-20; Col. 1, lines 45 plus and Col. 17, lines 15 plus).

Regarding claims 1-6, they are method claims corresponding to the apparatus claims 15-17 above. Therefore, claims 1-6 are analyzed and rejected as previously discussed with respect to claims 15-17.

With respect to claims 22-25, these claims differ from claims Duffield in view of Braff in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of claims 1-6 and 15-17 above. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Duffield in view of Braff for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to the scheduling packets from multiple queues in WFQ algorithm, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently scheduling packets from multiple queues in WFQ routing, and would have applied Braff's teaching of the scheduling discipline utilizing epoch queues into Duffield's novel use of the WFQ system implemented in routers and switches for routing packets in a communication network. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Braff's data channel scheduling discipline arrangement and method into Duffield's fair queuing system with adaptive bandwidth redistribution with the motivation being to provide a method and system for scheduling packets from multiple queues utilizing interleaved WFQ mechanism.

Allowable Subject Matter

8. Claims 7-14, 18 and 26-31 are objected to as being dependent upon the rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

9. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein the queue sequencer has access to a queue status register that indicates whether each queue identified in the interleaving table is empty or not, using the queue status register contents to step the pointer register to a next table entry within an epoch, when the queue status of the queue identified with the current entry indicates that the queue is empty, as specifically recited in the claims.

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Giroux et al. (US#6,317,416) is cited to show fair queue servicing using dynamic weights (DWFQ)

The Choudhury et al. (US#6,092,115) is cited to show the method for supporting per-connection queuing for feedback controlled traffic.

The Fan et al. (US#6,389,019) is cited to show the time-based scheduler architecture and method for ATM networks.

The Fawaz et al. (US#6,654,374) is cited to show the method and apparatus to reduce jitter in packet switched networks.

The Bruno et al. (US#6,434,631) is cited to show the method and system for providing computer storage access with QoS guarantees.

The Wicklund (US#6,295,295) is cited to show the scheduler for an information packet switch.

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The Wallmeier (US#6,031,822) is cited to show the method for optimized transmission of ATM cells via connection hops.

The Haddock et al. (US#6,678,248) is cited to show the policy based QoS.

The Pillar et al. (US#6,501,762) is cited to show the scheduler implementing WFQ by a weighted limited FIFO methodology.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029.

The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

13. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 305-9051, (for formal communications intended for entry)

Or:

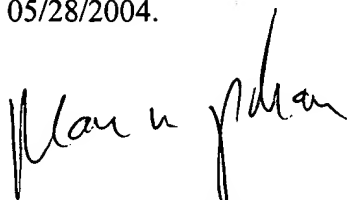
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(703) 305-3988 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive,
Arlington. VA., Sixth Floor (Receptionist).

Mphan

05/28/2004.



MAN PHAN
PATENT EXAMINER